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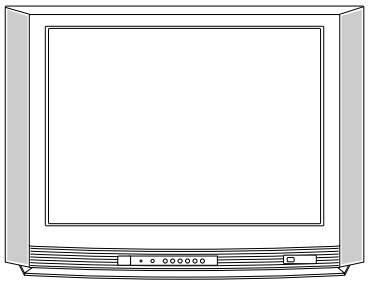
# COLOR TV
# SERVICE MANUAL

**CHASSIS : MC-019A**

## MODEL : CE/CL-21M64KX/KEX
## CE/CL-21M66KX/KEX

**CAUTION**
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



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# SAFETY PRECAUTIONS

## IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

### General Guidance

An **Isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitary that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Due to high vacuum and large surface area of picture tube, extreme care should be used in **handling the Picture Tube**. Do not lift the Picture tube by it's Neck.

### X-RAY Radiation

**Warning:**

The source of X-RAY RADIATION in this TV receiver is the High Voltage Section and the Picture Tube.
For continued X-RAY RADIATION protection, the replacement tube must be the same type tube as specified in the Replacement Parts List.

To determine the presence of high voltage, use an accurate high impedance HV meter.

Adjust brightness, color, contrast controls to minimum.
Measure the high voltage.
The meter reading should indicate
23.5 ¡ 1.5KV: 14-19 inch, 26 ¡ 1.5KV: 19-21 inch,
29.0 ¡ 1.5KV: 25-29 inch, 30.0 ¡ 1.5KV: 32 inch
If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.

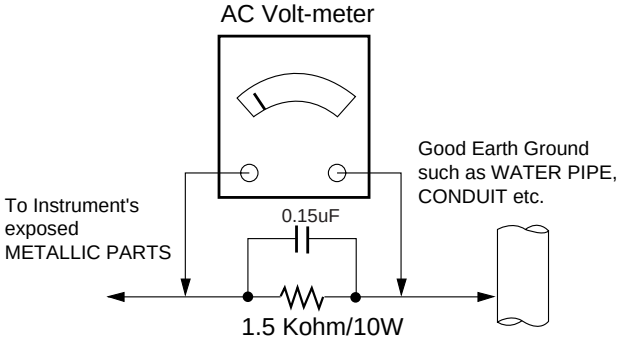
**Before returning the receiver to the customer,**

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

**Leakage Current Cold Check(Antenna Cold Check)**
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on positioin, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

**Leakage Current Hot Check** (See below Figure)
Plug the AC cord directly into the AC outlet.
**Do not use a line Isolation Transformer during this check.**
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each esposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits sepcified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

**Leakage Current Hot Check circuit**



# SERVICING PRECAUTIONS

**CAUTION:** Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.
*NOTE:* If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

**General Servicing Precautions**

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      **CAUTION:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   **CAUTION:** This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
9. *Use with this receiver only the test fixtures specified in this service manual.*
   **CAUTION:** Do not connect the test fixture ground strap to any heatsink in this receiver.

**Electrostatically Sensitive (ES) Devices**

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some fieldeffect transistors and semicounductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficent to demage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a repalcement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the ieads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   **CAUTION:**Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the bruching together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

**General Soldering Guidelines**

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintan tip temperature within the range or 500 ¡ÆF to 600 ¡ÆF.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thorohly clean the surfaces to be soldered. Use a mall wirebristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500 ¡ÆF to 600 ¡ÆF)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      **CAUTION:** Work quickly to avoid overheating the circuiboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500 ¡ÆF to 600 ¡ÆF)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

c. Qulckly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.

d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

**IC Remove/Replacement**

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in parapraphs 5 and 6 above.

*Removal*

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

*Replacement*

1. Carefully insert the replacement IC in the circuit boare.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

**"Small-Signal" Discrete Transistor Removal/Replacement**

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

**Power Output, Transistor Device Removal/Replacement**

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

**Diode Removal/Replacement**

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicula y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

**Fuse and Conventional Resistor Removal/Replacement**

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
**CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

**Circuit Board Foil Repair**

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

*At IC Connections*

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

*At Other Connections*

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involoves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
**CAUTION:** Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

# SPECIFICATIONS

**Note :** Specification and others are subject to change without notice for improvement.

- **Video input system:**
  PAL-B/G, D/K, I/I
  SECAM-B/G, D/K,L/L'
  NTSC M
  NTSC 4.43

- **Intermediate Frequency (Unit : MHz)**
  VISION IF : 38.9MHz
  COLOR IF : 34.47MHz(4.43)
  35.32MHz(3.58) : NTSC-M
  ( VIF-4.25000MHz
  VIF-4.40625MHz ): SECAM

  SOUND IF : 33.4MHz (B/G)
  32.9MHz (I/I)
  32.4MHz (D/K)
  34.4MHz (M)

- **Power requirement :** 110~240V, 50/60Hz
- **Power consumption :** 95
- **STAND-BY :** 3W

- **Tuning range**

| Band | For TV | | | | For CATV |
|---|---|---|---|---|---|
| | B/G | D/K | I/I | NTSC | |
| VHF-Low | Ch2-4 | Ch1-5 | | Ch2-13 | S1'-S3', S1 |
| VHF-High | Ch5-12 | Ch6-12 | Ch4-13 | | S2-S10, S11-S20 |
| Hyper | | | | | S21-S41 |
| UHF | Ch21-69 | | | Ch14-69 | |

- **Tuning system :**
  FVS
  100 Programme memory
  200 Programme memory(W/O TXT)

- **Antenna input impedance :** VHF/UHF 75 ohm, unbalanced

- **OSD (On Screen Display) :** EASY-MENU

- **Voice coil impedance :** 8 ohm

- **Sound output :** 7W ¡ ¿2(MAX)
  Dual/Stereo : A2/NICAM(Option)

- **External connection :** Head Phone Jack
  A/V in : 2
  PERI Connector(Full Scart) : 1
  DVD in

- **External In/Output**
  Audio-In:0.5Vrms±3dB,over 10Kohm
  Audio-Out:0.5Vrms±3dBb,below 1Kohm
  Video-In/Out:1Vp-p±3dB,75ohm
  DVD In Y: 1Vp-p±3dB
  Pb,Pr : 0.7Vp-p±3dB

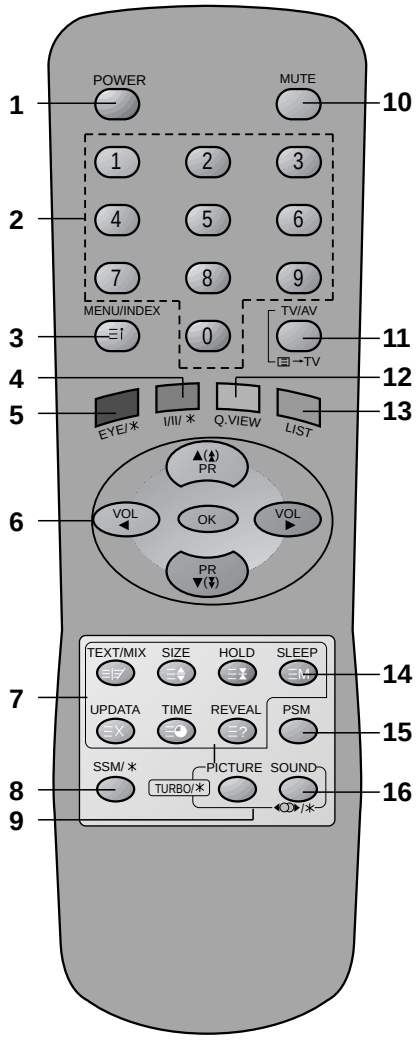
- **Feature :** Auto programme/Manual programme
  CSM (Color Status Memory)
  Auto Sleep
  Turbo Picture & Sound
  Programme Editing
  PSM (Picture Status Memory)
  Teletext (TOP/FLOF/LIST)
  ACMS
  Auto Volume Level
  Game
  SSM(Sound Status Memory)
  Favorite Program

# DECRIPTIONS OF CONTROLS

All the functions can be controlled with the remote control handset. Some functions can also be adjusted with the buttons on the front panel of the set.

## Remote control handset

Before you use the remote control handset, please install the batteries. See the next page.




**(With TELETEXT)**

1. **POWER**
   switches the set on from standby or off to standby.

2. **NUMBER BUTTONS**
   switches the set on from standby or directly select a number.

3. **MENU (or INDEX)**
   selects a menu.
   selects an index page in the teletext mode (only TELETEXT models).

4. **I/II/✱ (option)**
   selects the language during dual language broadcast. (option)
   selects the sound output.

5. **EYE/✱ (option)**
   switches the eye function on or off.

6. **▲ / ▼ (Programme Up/Down)**
   selects a programme or a menu item.
   switches the set on from standby.
   scans programmes automatically.
   **◄ / ► (Volume Up/Down)**
   adjusts the volume.
   adjusts menu settings.
   **OK**
   accepts your selection or displays the current mode.

7. **TELETEXT BUTTONS (option)**
   These buttons are used for teletext.
   For further details, see the ‘Teletext’ section.

8. **SSM/✱ (option) (Sound Status Memory)**
   recalls your preferred sound setting.

9. **TURBO PICTURE / SOUND BUTTON (option)**
   selects Turbo picture and sound.

**10. MUTE**
switches the sound on or off.

**11. TV/AV**
selects TV or AV mode.
clears the menu from the screen.
switches the set on from standby.

**12. Q.VIEW**
returns to the previously viewed programme.
selects a favorite programme.

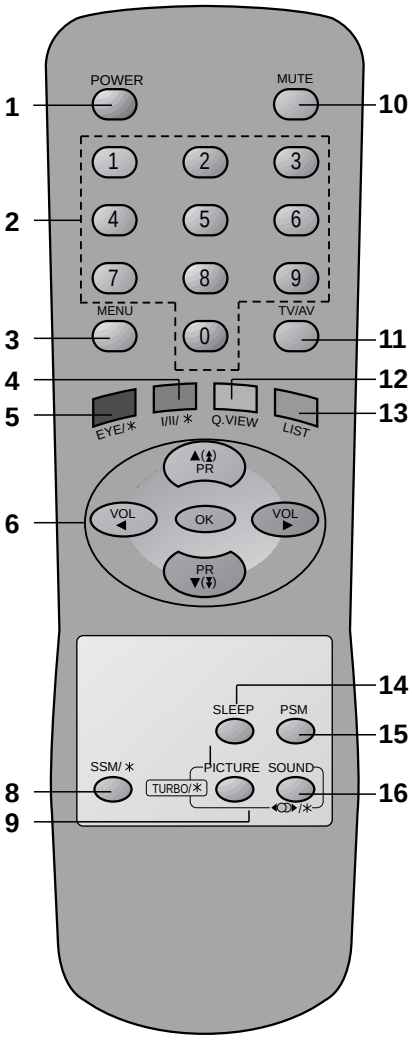
**13. LIST**
displays the programme table.

**14. SLEEP**
sets the sleep timer.

**15. PSM (Picture Status Memory)**
recalls your preferred picture setting.

**16. SURROUND (◀◯▶/✱) (option)**
selects surround sound.

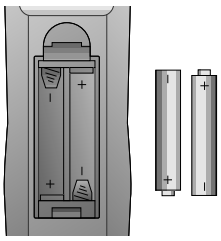
**COLOURED BUTTONS :** These buttons are used for teletext (only TELETEXT models) or programme edit.




**(Without TELETEXT)**

## Battery installation

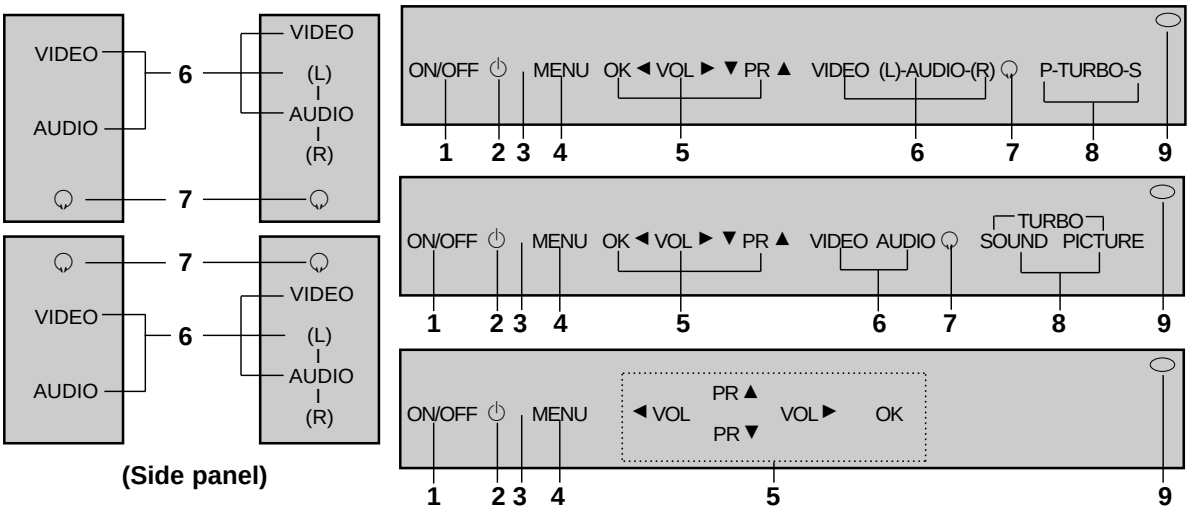
The remote control handset is powered by two AAA type batteries. To load the batteries, turn the remote control handset over and open the battery compartment. Install two batteries as indicated by the polarity symbols (⊕ and ⊖) marked inside the compartment.



***Note :*** *To avoid damage from possible battery leakage, remove the batteries if you do not plan to use the remote control handset for an extended period of time.*

## Front panel

Shown is a simplified representation of front or side panel.
Here shown may be somewhat different from your set.




**(Side panel)**

1. **MAIN POWER (ON/OFF)**
   switches the set on or off.

2. **POWER/STANDBY INDICATOR**
   illuminates brightly when the set is in standby mode.
   dims when the set is switched on.
   blinks when signal is input from the remote control.

3. **REMOTE CONTROL SENSOR**

4. **MENU**
   selects a menu.

5. **OK**
   accepts your selection or displays the current mode.
   **◄ / ► (Volume Up/Down)**
   adjusts the volume.
   adjusts menu settings.
   **▲ / ▼ (Programme Up/Down)**
   selects a programme or a menu item.
   switches the set on from standby.

6. **AUDIO/VIDEO IN SOCKETS (AV) (option)**
   Connect the audio/video out sockets of external equipment to these sockets.
   ***Note :****If both the input jacks on the front/side panel and back panel have been connected to external equipments simultaneously, only the input jacks on the front/side panel can be received.*

7. **HEADPHONE SOCKET (option)**
   Connect the headphone plug to this socket.

8. **TURBO SOUND/PICTURE (option)**
   switches Turbo sound or Turbo picture on or off.

9. **EYE (option)**
   adjusts picture according to the surrounding conditions.

# DISASSEMBLY INSTRUCTIONS

### Important note
This set is disconnected from the power supply through the converter transformer. An isolating transformer is necessary for service operations on the primary side of the converter transformer.

### Back Cabinet Removal
Remove the screws residing on the back cabinet and carefully separate the back cabinet from the front cabinet. (Fig. 2-1).

### CPT Removal
1. Pull out the CPT board from the CPT neck.
2. Place the front cabinet on soft material not to mar the front surface or damage control knobs.
3. Remove 5 screws securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate CPT from the front cabinet.

### Chassis Assy Removal
Grasp both side of Frame and pull it backward smoothly.

### PICTURE TUBE HANDLING CAUTION
Due to high vacuum and large surface area of picture tube, great care must be exercised when handling picture tube. Always lift picture tube by grasping it firmly around faceplate.
NEVER LIFT TUBE BY ITS NECK! The picture tube must not be scratched or subjected to excessive pressure as fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.

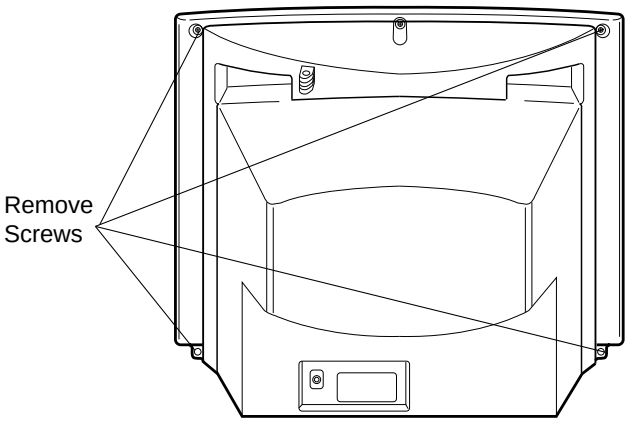



Fig. 2-1

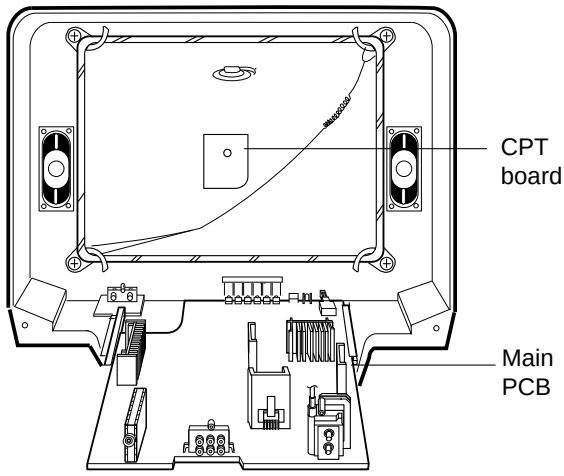



Fig. 2-2

# ADJUSTMENT

## ● Safety Precautions

1. It is safe to adjust after using insulating transformer between the power supply line and chassis input to prevent the risk of electric shock and protect the instrument.
2. Never disconnect leads while the TV receiver is on.
3. Don't short any portion of circuits while power is on.
4. The adjustment must be done by the correct appliances. But this is changeable in view of productivity.
5. Unless otherwise noted, set the line voltage to 110~240Vac ±10%, 50/60Hz.
6. The adjustment of TV should be performed afther warming up for 20 minutes.

## ● Test Equipment required

1. Multimeter (volt meter)
2. Oscilloscope
3. 10:1 PROBE
4. Color Analyzer

## ● CDL Data Adjustment(LINE SVC-0)

1) Press the SVC button to get into the SVC-0 Mode.
2) Press the Channel UP/DOWN button to select CDL12.
3) Press the Volume UP/DOWN button until the CDL data is the same as the Table below.

| | 21" FCD | 14,16" CPT | 15" CPT | 20,21" CPT |
|---|---|---|---|---|
| **CDL Data** | **12** | **8** | **10** | **12** |
| Remark | **FLAT** | | **FLAT** | |

4) Press the OK(■) button to memorize the data.

## ● OPTION Data Adjustment(OPTION-1,OPTION-2)

1) Press OK buttons on both TV set and Remote Controller at the same time to get into SVC mode.
2) Press the Yellow button several times to find OPTION-1 or OPTION-2.
3) Input the correspond OPTION data referring to Table below with the numeric buttons.
4) Press the OK(■) button to memorize the data.

**Table 1. OPTION 1 Function**

| Option | Code | Function | Remark |
|---|---|---|---|
| C MUTE | 0 | ACTIVE | |
| | 1 | NOT ACTIVE | |
| DVD | 0 | W/O DVD | |
| | 1 | DVD(REAR JACK) | |
| 2 IN 1 | 0 | W/O 2 IN 1TUNER | |
| | 1 | WITH 2 IN 1TUNER | |
| TOP | 0 | FLOF TXT | |
| | 1 | TOP TXT | |
| SCART | 0 | PHONO JACK | |
| | 1 | SCART JACK | |
| TBS | 0 | W/O TBS | |
| | 1 | WITH TBS | |
| EYE | 0 | W/O EYE | |
| | 1 | WITH EYE | |
| 4 KEY | 0 | W/O 4 KEY | |
| | 1 | WITH 4 KEY | |
| MONO | 0 | | |
| | 1 | FORCED MONO | |

**Table 2. OPTION 2 Function**

| Option | Code | Function | Remark |
|---|---|---|---|
| BCF | 0 | Auto Abnormal ON | |
| | 1 | Not Used | |
| GAME | 0 | W/O GAME PACK | |
| | 1 | WITH GAME PACK | |
| 200 PRO | 0 | 100 PRO | |
| | 1 | 200 PRO | |
| CHA + AU | 0 | Except China,Austrailia | |
| | 1 | China,Austrailia | |
| DUAL | 0 | W/O DUAL | |
| | 1 | WITH DUAL | |
| ACMS | 0 | Austrailia | |
| | 1 | Except Austrailia | |
| T-SCH | 0 | W/O TURBO SEARCH | |
| | 1 | WITH TURBO SEARCH | |
| T-P/S | 0 | W/O TURBO P/S | |
| | 1 | WITH TURBO P/S | |
| CURVE | 0 | NORMAL VOLUME CURVE | |
| | 1 | M-A,India VOLUME CURVE | |

**Table 3. OPTION 3 Function**

| Option | Code | Function | Remark |
|---|---|---|---|
| RESER VED | 0 | * * * | |
| | 1 | * * * | |
| HOTEL | 0 | W/O HOTEL | |
| | 1 | W/HOTEL | |
| SYSTEM | 0 | BG/L | |
| | 1 | BG/I/DK | |
| | 2 | BG/I/DK/M | |
| | 3 | BG/I/DK DUAL | |
| | 4 | BG/I/DK/M DUAL | |
| | 5 | 2nd IF BG | |
| | 6 | 2nd IF I | |
| | 7 | 2nd IF DK | |

| Option | Code | Function | Remark |
|---|---|---|---|
| OSD-L (EU) | 0 | ENG. ONLY | English |
| | 1 | EU-7EA | English,Deutsch,Francais,Italiano,Espanol |
| | 2 | EU ALL | English,Nederlands,Svenska,Dansk,Suomi,Por |
| | | | tugues,Romaneste,Polski,Cesky,Pyccknn |
| | 3 | EU EAST | English,Romaneste,Polski,Cesky,Pyccknn,Magyar |
| OSD-L (M-ASIA) | 0 | ENG. ONLY | English |
| | 1 | ARABIC | English,Arab,,Urdu,French |
| | 2 | PARSI | English,Parsi,Urdu,French |
| | 3 | ARAB,FARSI,URDE | English,French,Arab,Urdu,Parsi |
| OSD-L (E-ASIA) | 0 | ENG.ONLY | English |
| | 1 | ASIA-ALL | English,Malay,Vietnam,Indonesian,Thai |
| OSD-L (CH+HI) | 0 | ENG.ONLY | English |
| | 1 | E+CHINA | English,Chinese |
| | 2 | E+HINDI | English,Hindi |
| TXT-L (EU) | 0 | W-EU | |
| | 1 | E-EU | |
| | 2 | CYRILLIC | |
| | 3 | UKRAINIAN | |
| TXT-L (E-ASIA) | 0 | WEST-EU | |
| TXT-L (ARAB) | 0 | WEST-EU | |
| | 1 | ARABIC | |
| TXT-L (FARSI) | 0 | WEST-EU | |
| | 1 | FARSI | |

## ● AGC Adjustment (SERVICE 1)

| | |
|---|---|
| Test Point | **: AGC TP (C101)** |
| Adjust | **: Remote Controller** |

1) Connect RF signal (70dB±0.2dB) and turn on the TV.
¡ Standard adjustment Channel
- EU 05 Ch. ($f_{rf}$ = 175.25MHz)
2) Press the OK buttons on TV set and Remote Controller at the same time to get into SVC-0 mode.
3) Press the Channel UP/DOWN button on the Remote Controller several times to find AGC??.
4) Press the Volume UP/DOWN button until the AGC Voltage is the same as the Table below.
5) Press the OK(■) button to memorize the data.

| Tuner P/N | 6700VPF009G | 6700VPF016A |
|---|---|---|
| Marker | LG Innotek(W/S TUNER) | DAEWOO(W/S TUNER) |
| AGC Voltage | 2.7± 0.05V | 2.7± 0.05V |

| Tuner P/N | 6700VPF009S | |
|---|---|---|
| Marker | LG Innotek(TBS TUNER) | |
| AGC Voltage | 2.5± 0.05V | |

## ● FOCUS Adjustment

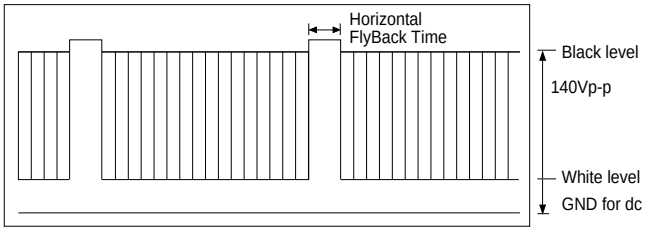
| | |
|---|---|
| Test Point | **: RK (Red Cathode of CPT Board)** |
| Adjust | **: Screen Volume of FBT** |

1) Tune the TV set to receive a PAL 05CH.
2) Adjust the Focus Volume of FBT for best focus.

## ● Screen Voltage Adjustment

| | |
|---|---|
| Test Point | **: Observing Display** |
| Adjust | **: Focus Volume of FBT** |

1) Connect the probe of oscilloscope to the RK (Red Cathode) of CPT Board.
2) Set the oscilloscope to 50V/div and 20Us/div and after putting GND line upon the lowest grid line of the scope by pressing GND button,enter into DC mode.
3) Tune the TV set to receive a PAL-B/G 05CH.
4) Adjust Screen Volume of FBT so that the waveform is the same as below figure (DC 140±3V).




| 14” | OTHERS |
|---|---|
| DC 130V±3 V | DC 140V±3 V |

## ● White Balance Adjustment.(LINE SVC-0)

**NOTE :** This adjustment should be performed after screen voltage adjustment.

1) Tune the TV set to receive an 100% white pattern.
2) Press OK(■) buttons on TV set and remote controller at the same time to get into SVC mode.
3) Press Yellow button on remote controller. (Standard mode)
4) Press Channel UP/DOWN button for desirous function adjustment.
5) Adjust VOL+ or VOL-button in each status of "RG--"/"BG--" for X=272±8, Y=288±8 with color analyzer.(Europe Model**:** X=288±8, Y=295±X=272±8, 11,000K)

| Status | Initial Data | Remark |
|---|---|---|
| RG | 31 | |
| GG | 31 | |
| BG | 31 | |
| BLO-R | 31 | |
| BLO-G | 31 | |

7) Press the OK(■) button to memorize the data.

## ● Deflection Data Adjustment (Line SVC-1)

**NOTE:** To enter SVC mode, press "OK" buttons on both TV set and the Remote control at the same time.

### 1. Preparation for Deflection Adjustment

1) At SVC mode, press the Yellow colored button.
   And then, deflection data adjustment OSD (SVC1 mode) will be displayed.
2) Tune the TV set to receive a PAL 05 CH and set the ARC mode is standard.

### 2. Deflection Initial Setup Data

| Status | Default | 21" FLAT S/S | 21" FLAT LG |
|---|---|---|---|
| VL | 31 | 31 | 31 |
| VA | 31 | 31 | 31 |
| VS | 31 | 31 | 31 |
| HS | 31 | 31 | 31 |
| SC | 25 | 25 | 25 |

### 3. Deflection Adjustment Procedure

**VL (Vertical Linearity)**
Adjust so that the boundary line between upper and lower half is in accord with geometric horizontal center of the CPT.

**VA (Vertical Amplitude)**
Adjust so that the circle of a digital circle pattern may be located within the effective screen of the CPT.

**SC (Vertical "S" Correction)**
Adjust so that all distance between each horizontal lines are to be the same.

**VS (Vertical Shift)**
Adjust so that the horizontal center line of a digital circle pattern is in accord with geometric horizontal center of the CPT.

**HS (Horizontal Shift)**
Adjust so that the vertical center line of a digital circle pattern is in accord with geometric vertical center of the CPT.

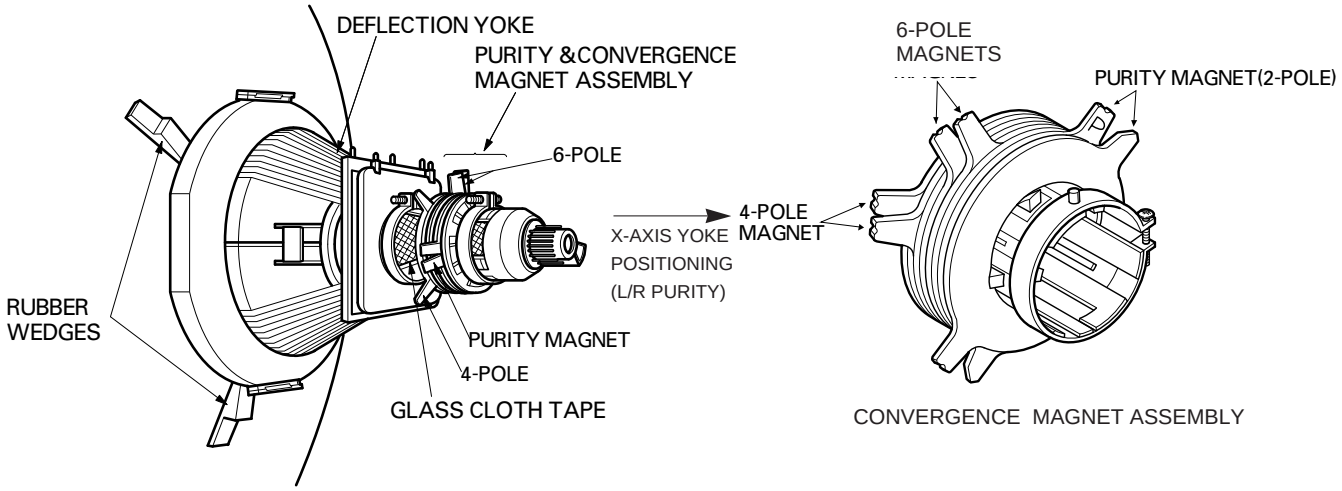
Press the OK(■) button to memorize the data.

# PURITY & CONVERGENCE ADJUSTMENT

**Caution:**
Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments.
However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity any convergence.

5. Reconnect the internal degaussing coil.

6. Position the beam bender locking rings at the 9 o'clock position and the other three pairs of tabs (2,4 and 6 pole magnets) at the 12 o'clock position.




## ¡ Purity Adjustment

This procedure DOES NOT apply to bonded yoke and picture tube assemblies.
The instrument should be at room temperature (60 degrees F or above) for six (6) hours and be operating at low beam current (dark background) for approximately 20 to 30 minutes before performing purity adjustments.

**CAUTION:** Do not remove any trim magnets that may be attached to the bell of the picture tube.

1. Remove the AC power and disconnect the internal degaussing coil.

2. Remove the yoke from the neck of the picture tube.

3. If the yoke has the tape version beam bender, remove it and replace it with a adjustable type beam bender (follow the instructions provided with the new beam bender)

4. Replace the yoke on the picture tube neck, temporarily remove the three (3) rubber wedges from the bell of the picture tube and then slide the yoke completely forward.

7. Perform the following steps, in the order given, to prepare the receiver for the purity adjustment procedure.

   a. Face the receiver in the "magnetic north" direction.

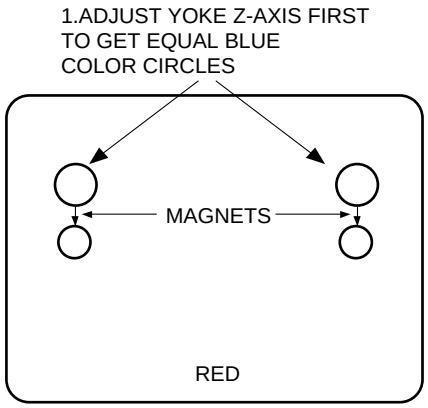
   b. Externally degauss the receiver screen with the television power turned off.

   c. Turn the television on for approximately 10 seconds to perform internal degaussing and then turn the TV off.

   d. Unplug the internal degaussing coil. This allows the thermistor to cool down while you are performing the purity adjustment. DO NOT MOVE THE RECEIVER FROM ITS "MAGNETIC NORTH" POSITION.

   e. Turn the receiver on and obtain a red raster by increasing the red bias control (CW) and decreasing the bias controls for the remaining two colors (CCW).

   f. Attach two round magnets on the picture tube screen at 3 o'clock and 9 o'clock positions, approximately one (1) inch from the edge of the mask (use double-sided tape).




8. Referring to above, perform the following two steps:
   a. Adjust the yoke Z-axis to obtain equal blue circles.
   b. Adjust the appropriate beam bender tabs to obtain correct purity (four equal circles).

9. After correct purity is set, tighten the yoke clamp screw and remove the two screen magnets.

10. Remove the AC power and rotate the receiver 180 degrees (facing "magnetic south").

11. Reconnect the internal degaussing coil.

12. Turn the receiver on for 10 seconds (make sure the receiver came on) to perform internal degaussing, and then turn the receiver off.

13. Unplug the internal degaussing coil.

14. Turn on the receiver and check the purity by holding one (1) round magnet at the 3 o'clock and a second round magnet at 9 o'clock position. If purity is not satisfactory, repeat steps 8 through 14.

15. Turn off the receiver and reconnect the internal degaussing coil.

## ¡ Convergence Adjustment

**Caution:** This procedure DOES NOT apply to bonded yoke and picture tube assemblies.
Do not use screen magnets during this adjustment procedure. Use of screen magnets will cause an incorrect display.

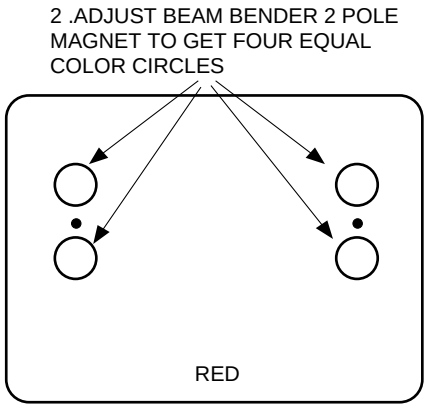
1. Remove AC power and disconnect the internal degaussing coil.

2. Apply AC Power and set the brightness to the Picture Reset condition. Set the Color control to minimum.

3. Make a horizontal line.

4. Adjust the Red, Green and Blue Bias controls to get a dim white line.

5. Restore the screen by removing the horizontal line.




6. Reconnect the internal degaussing coil and apply AC power.

7. Turn the receiver on for 10 seconds to perform internal degaussing and then turn the receiver off again.

8. Unplug the internal degaussing-coil.

9. Turn on the receiver, connect a signal generator to the VHF antenna terminal and apply a crosshatch signal.

**Caution:** During the convergence adjustment procedure, be very careful not to disturb the purity adjustment tabs are accidentally move, purity should be confirmed before proceeding with the convergence adjustments.

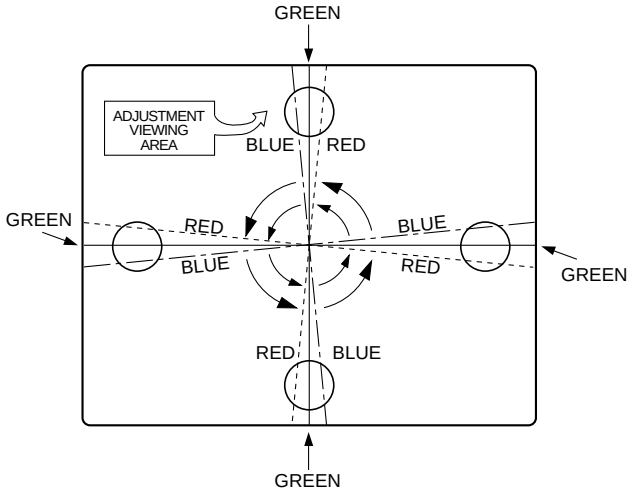
**Note:** Make sure the focus is set correctly on this instrument before proceeding with the following adjustment.

10. Converge the red and blue vertical lines to the green vertical line at the center of the screen by performing the following steps (below TABLE).
    a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue vertical lines.
    b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in opposite directions form the 12 o'clock position to converge the red and blue (now purple) vertical lines with the green vertical line.

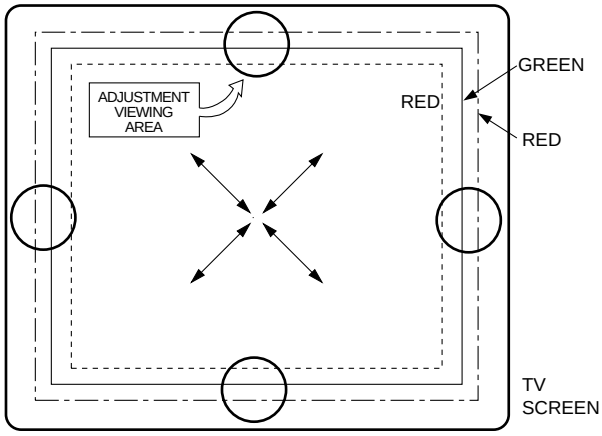
11. Converge the red and blue horizontal with the green line at the center of the screen by performing the following steps. (below TABLE)
    a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in the same direction (keep the spacing between the two tabs the same) to converge the red and blue horizontal lines.
    b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in same direction (keep the spacing between the two tabs the same) to converge the red and blue (now purple) horizontal lines with the green horizontal line.
    c. Secure the tabs previsouly adjusted by locking them in place with the locking tabs on the beam bender.

| RING PAIRS | ROTATION DIRECTION OF BOTH TABS | MOVEMENT OF RED AND BLUE BEAMS |
|---|---|---|
| 4 POLE | OPPOSITE | B R OR B R |
| | SAME | B R OR B R |
| 6 POLE | OPPOSITE | B R OR B R |
| | SAME | B R OR B R |

UP/DOWN ROCKING OF THE YOKE CAUSES OPPOSITE ROTATION OF RED AND BLUE RASTERS

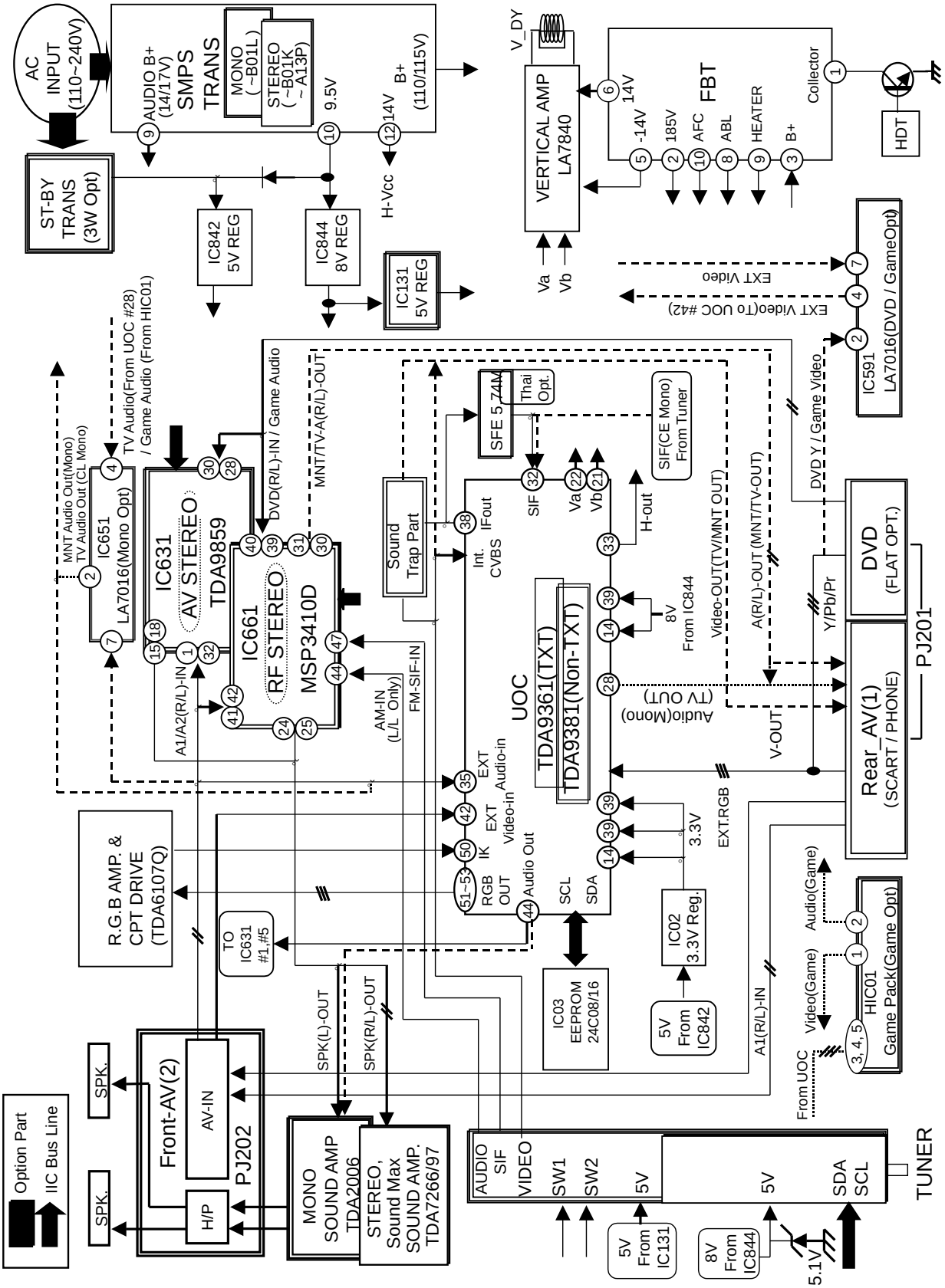



LEFT/RIGHT ROCKING OF THE YOKE CAUSES OPPOSITE SIZE CHANGE OF THE RED AND BLUE RASTERS

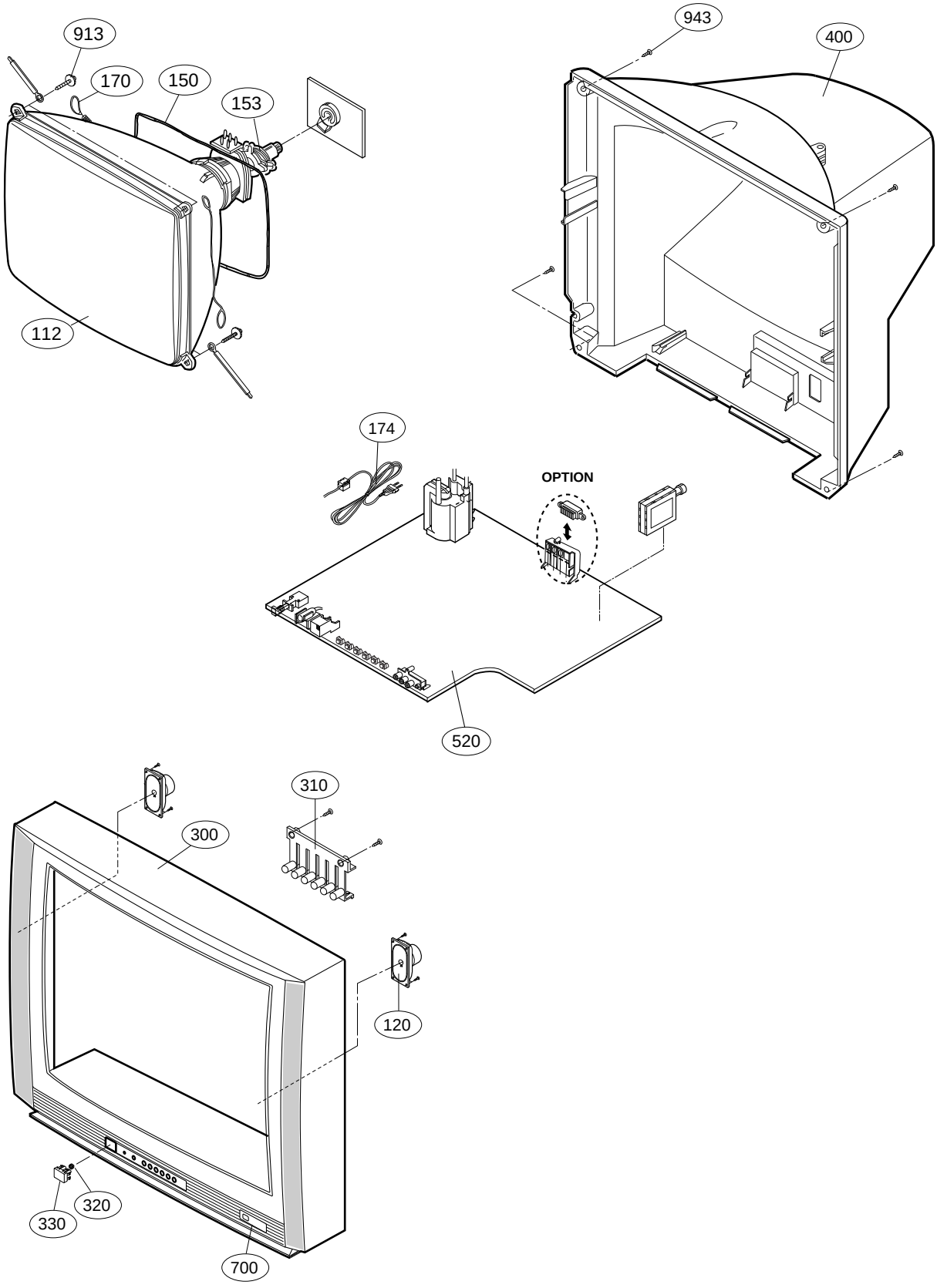



12. While watching the 6 o'clock positions on the screen, rock the front of the yoke in a vertical (up/down) direction to converge the red and blue vertical lines. (Fig upper left)
13. Temporarily place a rubber wedge at the 12 o'clock position to hold the vertical position or the yoke.
14. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue horizontal lines are converged.
    If the lines are not converged, slightly offset the vertical tilt of the yoke (move the rubber wedge if necessary) to equally balance the convergence error of the horizontal lines at 3 o'clock and 9 o'clock and the vertical lines at 6 o'clock and 12 o'clock.
15. Place a 1.5 inch piece of glass tape over the rubber foot at the rear of the 12 o'clock wedge.
16. While watching the 6 o'clock and 12 o'clock areas of the screen, rock the front of the yoke in the horizontal (left to right) motion to converge the red and blue horizontal lines. (Fig. upper right)
17. Temporarily place a rubber wedge at the 5 o'clock and 7 o'clock positions to hold the horizontal position of the yoke.
18. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue vertical lines are converged. If the lines are not converged, slightly offset the horizontal tilt of the yoke (move the temporary rubber wedges if necessary) to equally balance the convergence error of the horizontal lines at 6 o'clock and 12 o'clock and the vertical lines at 3 o'clock and 9 o'clock.
19. Using a round magnet confirm purity at the center, right and left sides and corners. See Purity Adjustment Procedure.
20. Reconfirm convergence and apply a 1.5 inch piece of glass tape over the rubber foot at the rear of the 5 o'clock and the 7 o'clock wedges.

# BLOCK DIAGRAM



# EXPLODED VIEW



# EXPLODED VIEW PARTS LIST

The components identified by mark ⚠ is critical for safety.
Replace only with part number specified.

| LOCA. NO | PART NO | DESCRIPTIONS |
|---|---|---|
| ⚠ 112 | 112-C21G | CPT SET A51EER131X73 LGENE LOCAL |
| | 112-C21H | CPT SET A51QAE320X |
| 120 | 6400VA0019D | SPEAKER,H905/020801B MOTORJOY 8OHM 7/1 |
| ⚠ 150 | 150-D02X | COIL,DEGAUSSING CU 21” 60TURN 12 OHM D02N (NYL |
| ⚠ 170 | 170-A01D | LEAD SET,CPT EARTH |
| ⚠ 174 | 174-009E | POWER CORD(W/HOLD,HOUSING,L=200,4.0 |
| 300 | 3091V00380B | CABINET ASSEMBLY W/O EYE LGEMA LOCAL |
| | 3091V00380C | CABINET ASSEMBLY W/ EYE LGEMA LOCAL |
| 310 | 5020V00488A | BUTTON |
| 320 | 320-070R | SPRING |
| 330 | 5020V00489A | BUTTON |
| 400 | 3809V00149C | BACK COVER ASSEMBLY SCART |
| 520 | 3141VMN850J | CHASSIS ASSY,MAIN 019A(W/3W) |
| | 3141VMN850K | CHASSIS ASSY,MAIN 019A(W/O 3W) |
| | 3141VMNP07E | CHASSIS ASSY,MAIN 019A 21M64 |
| | 3141VMN850N | CHASSIS ASSY,MAIN 019A CL-21M66KEX |
| | 3141VMN738L | CHASSIS ASSY,MAIN 019A CL-21M66KX |
| | 3141VMNP07F | CHASSIS ASSY,MAIN 019A CE-21M66KEX |
| | 3141VMNP07J | CHASSIS ASSY,MAIN 019A CE-21M66KEX |
| | 3141VMN850P | CHASSIS ASSY,MAIN 019A CE-21M66KX(S/S CPT) |
| 600 | 6871VSMB16B | PWB ASSY,M65/66,SIDE A/V(W/SUP |
| 700 | 0IGL120104A | IC,CDS SENSOR MODULE |
| 913 | 332-057J | SCREW,DRAWING ASSY,HEXAGON HEAD |

The components identified by mark ⚠ are critical for safety.
Replace only with part number specified.

# REPLACEMENT PARTS LIST

| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| | | **IC** |
| IC01 | 0ICTMPH006C | IC,TDA9361PS/N2/4I,0793 PHILIPS 64P ST |
| IC02 | 0IMCRNS005A | IC,LM1117T-3.3 NATIONAL |
| IC03 | 0IAL241600B | IC,AT24C16-10PC 8D EEPROM 16K |
| IC130 | 0IMCRSG004A | IC,L7805CV |
| IC301 | 0ISA784070A | IC,LA7840 7S VERTICAL |
| IC602 | 0ISG726600A | IC,TDA7266S 15 SIP ST SOUND AMP M |
| IC603 | 0IFA754207A | IC,KA75420ZTA(KA7542ZTA) 3P,TO-92 |
| IC661 | 0IIT341000J | IC,MSP3410D-C5 52P SDIP BK MULTI |
| IC621 | 0ISG200600A | IC,TDA2006 5Z 1CHX10W |
| IC662 | 0IFA753307A | IC,KA75330ZTA(KA7533ZTA) 3P,TO-92 |
| ⚠ IC801 | 0ILI817000G | IC,LTV817M-VB 4P,DIP BK PHOTO COU |
| ⚠ IC802 | 0ILI817000G | IC,LTV817M-VB 4P,DIP BK PHOTO COU |
| ⚠ IC803 | 0ISK665413C | IC,STR-F6654R(LF1352) 5 SIP BK ST |
| ⚠ IC804 | 0ISK110000A | IC,SE110N(LF12) 3P 110V ERROR AMP |
| IC842 | 0IMCRUK002A | IC,S78DL05 AUK 3P,TO92 TP 5V-REGU |
| IC844 | 0IMCRKE001A | IC,KIA78R08PI KEC 4PIN,TO220IS-4 |
| IC901 | 0IPH610700A | IC,TDA6107Q SIP9 BK VIDEO OUT AMP |
| | | **DIODE** |
| D301 | 0DD400509AA | DIODE,RECTIFIER 1N4005 GP TA |
| D401 | 0DD150009CA | DIODE,RECTIFIER RGP15J,TP(52MM),GI |
| D441 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D442 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D443 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D501 | 0DD414809ED | DIODE,1N4148 TA |
| D571 | 0DD414809ED | DIODE,1N4148 TA |
| D801 | 0DD414809ED | DIODE,1N4148 TA |
| D802 | 0DD100009AM | DIODE,RECTIFIER EU1ZV(1) TP SANKEN |
| D803 | 0DD414809ED | DIODE,1N4148 TA |
| D804 | 0DD360009AA | DIODE,BYW36(2A/600V) |
| D805 | 0DD200009AH | DIODE,RU2AMV |
| D806 | 0DD100009AM | DIODE,RECTIFIER EU1ZV(1) TP SANKEN |
| D807 | 0DD300009AC | DIODE,RECTIFIER RU3AMV(1) TP SANKEN |
| D808 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D809 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D810 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D811 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D812 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D813 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D815 | 0DD420000BB | DIODE,D4L20U SHINDENGEN |
| D816 | 0DD060009AC | DIODE,TVR06J 0.6A/600V 250NS TP G.I |
| D824 | 0DD420000BB | DIODE,D4L20U SHINDENGEN |
| D901 | 0DR210009AC | DIODE,RECTIFIER BAV21 TP |
| D902 | 0DR210009AC | DIODE,RECTIFIER BAV21 TP |
| D903 | 0DR210009AC | DIODE,RECTIFIER BAV21 TP |
| D904 | 0DR140049AC | DIODE,RECTIFIER 1N4004A |
| ⚠ DB801 | 0DD260000BB | DIODE,RECTIFIER BRIDGE D2SBA60(STK) |
| LD01 | 4930V00183B | HOLDER LED MODULE ASSY . 4PIN |
| ZD01 | 0DZ910009AJ | DIODE,ZENER MTZJ9.1B |
| ZD101 | 0DZ510009AK | DIODE,ZENER GDZJ5.1B TP GRANDE DO34 0.5W 5 |
| ZD441 | 0DZ620009AK | DIODE,ZENER GDZJ6.2B TP GRANDE DO34 0.5W 6 |
| ZD442 | 0DZ820009BF | DIODE,ZENER GDZJ8.2B TP GRANDE DO34 0.5W 8 |
| ZD443 | 0DZ330009DG | DIODE,ZENER GDZJ33B TP GRANDE DO34 0.5W 33 |
| ZD501 | 0DZ820009BF | DIODE,ZENER GDZJ8.2B TP GRANDE DO34 0.5W 8 |
| ZD601 | 0DZ910009BD | DIODE,ZENER GDZJ9.1B TP GRANDE DO34 0.5W 9 |
| | | **TRANSISTOR** |
| Q01 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q101 | 0TR102009AB | TR,KRC102M,TP(KRC1202),KEC |
| Q123 | 0TR534309AA | TR,2SC5343Y TP AUK - - |
| Q301 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q402 | 0TRSA10002A | TR,TT2140 SANYO ST TO220F |
| Q442 | 0TR233109AA | TR,KSC2331-Y TP SAMSUNG TO-92L |
| Q551 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q555 | 0TR534309AA | TR,2SC5343Y TP AUK - - |
| Q571 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q621 | 0TR534309AA | TR,2SC5343Y TP AUK - - |
| Q651 | 0TR534309AA | TR,2SC5343Y TP AUK - - |
| Q653 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q671 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q672 | 0TR198009BA | TR,2SA1980Y TP AUK - - |
| Q801 | 0TR102009AB | TR,KRC102M,TP(KRC1202),KEC |
| Q802 | 0TR102009AB | TR,KRC102M,TP(KRC1202),KEC |
| Q803 | 0TRAU90005A | TR,AUK KOREA 2SC5342-Y TP TO92 32 |
| Q806 | 0TR102009AB | TR,KRC102M,TP(KRC1202),KEC |
| | | **CAPACITOR** |
| C01 | 0CN1020K519 | 1000P 50V K B TA52 |
| C02 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C03 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C04 | 0CC2200K415 | 22P 50V J NPO TS |
| C05 | 0CC2200K415 | 22P 50V J NPO TS |
| C07 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C21 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C51 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C102 | 0CE105DK618 | 1UF STD 50V M FL TP5 |
| C103 | 0CE227DD618 | 220UF STD 10V M |
| C107 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C109 | 0CE476DK618 | 47UF STD 50V M FL TP5 |
| C113 | 0CN1020K519 | 1000P 50V K B TA52 |
| C121 | 0CN1010K519 | 100P 50V K B TA52 |
| C123 | 0CE476DF618 | 47UF STD 16V M |
| C131 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C201 | 0CE227DD618 | 220UF STD 10V M FL TP5 |
| C202 | 0CN4710K519 | 470P 50V K B TA52 |
| C204 | 0CN4710K519 | 470P 50V K B TA52 |
| C206 | 0CN4710K519 | 470P 50V K B TA52 |
| C207 | 0CN4710K519 | 470P 50V K B TA52 |
| C208 | 0CE226DF618 | 22UF STD 16V M FL TP5 |
| C209 | 0CE226DF618 | 22UF STD 16V M FL TP5 |
| C210 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C211 | 0CN1010K519 | 100P 50V K B TA52 |
| C212 | 0CN1010K519 | 100P 50V K B TA52 |
| C253 | 0CN1020K519 | 1000P 50V K B TA52 |

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CQ : Polyestor
CE : Electrolytic

RD : Carbon Film
RS : Metal Oxide Film
RN : Metal Film
RF : Fusible

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| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| C255 | 0CN1020K519 | 1000P 50V K B TA52 |
| C301 | 0CQ1041N509 | 0.1U 100V K POLY TP |
| C302 | 0CQ3931N509 | 0.0390UF 100V K PE TP |
| C303 | 0CK1810W515 | 180P 500V K B TS |
| C304 | 0CE107DJ618 | 100UF STD 35V M FL TP5 |
| C307 | 0CQ6821N509 | 0.0068U 100V K POLY TP |
| C401 | 181-013Z | MPP 400V 0.30UF J |
| C402 | 0CE475DP618 | 4.7UF STD 160V 20% FL TP 5 |
| C403 | 181-015E | MPP 1600V 0.0068UF H |
| C404 | 0CK8210W515 | 820P 500V K B TS |
| C441 | 0CQ1531N509 | 0.015U 100V K POLY TP |
| C443 | 0CE477DH618 | 470UF STD 25V M FL TP5 |
| C444 | 0CE475DR618 | 4.7UF STD 250V 20% FL TP 5 |
| C446 | 0CE477DH618 | 470UF STD 25V M FL TP5 |
| C447 | 0CQ3321N509 | 0.0033U 100V K POLY TP |
| C449 | 181-009V | PP 200V 0.047UF K |
| C452 | 0CE106DK618 | 10UF STD 50V M FL TP5 |
| C501 | 0CF2241L438 | 0.22UF D 63V 5% TP 5 M/PE NI |
| C502 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C503 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C504 | 0CE225DK618 | 2.2UF STD 50V 20% FL TP 5 |
| C505 | 0CQ2221N509 | 0.0022U 100V K POLY TP |
| C506 | 0CE105DK618 | 1UF STD 50V M FL TP5 |
| C507 | 0CQ2221N509 | 0.0022U 100V K POLY TP |
| C509 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C511 | 0CE105DK618 | 1UF STD 50V M FL TP5 |
| C512 | 0CN1020K519 | 1000P 50V K B TA52 |
| C513 | 0CN1020K519 | 1000P 50V K B TA52 |
| C516 | 0CQ3321N509 | 0.0033U 100V K POLY TP |
| C517 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C518 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C519 | 0CF1041N450 | 0.1UF D 100V 5% BULK PP NI |
| C524 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C529 | 0CE225CK636 | 2.2UF SHL 50V M FL TP5 |
| C531 | 0CN1020K519 | 1000P 50V K B TA52 |
| C532 | 0CE225DK618 | 2.2UF STD 50V M FL TP5 |
| C533 | 0CE476DF618 | 47UF STD 16V M |
| C534 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C535 | 0CN1010K519 | 100P 50V K B TA52 |
| C538 | 0CF4741L438 | 0.47UF D 63V 5% TP 5 M/PE NI |
| C540 | 0CN2230H949 | 22000P 25V Z FTA52 |
| C541 | 0CN2230H949 | 22000P 25V Z FTA52 |
| C542 | 0CN2230H949 | 22000P 25V Z FTA52 |
| C548 | 0CN8210K519 | 820P 50V K |
| C549 | 0CQ4721N509 | 0.0047U 100V K POLY TP |
| C553 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C561 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C574 | 0CQ1021N509 | 0.001U 100V K POLY TP |
| C594 | 0CQ1041N509 | 0.1U 100V K POLY TP |
| C601 | 0CE226DF618 | 22UF STD 16V M FL TP5 |
| C602 | 0CF2241L438 | 0.22UF D 63V 5% TP 5 M/PE NI |
| C603 | 0CQ4721N509 | 0.0047U 100V K POLY TP |

| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| C605 | 0CQ4721N509 | 0.0047U 100V K POLY TP |
| C606 | 0CF2241L438 | 0.22UF D 63V 5% TP 5 M/PE NI |
| C607 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C612 | 0CE477DH618 | 470UF STD 25V M FL TP5 |
| " | 0CE477DJ618 | 470UF STD 35V M FL TP5 |
| C621 | 0CQ6821N509 | 0.0068U 100V K POLY TP |
| C622 | 0CE225DK618 | 2.2UF STD 50V M |
| C623 | 0CE106DH618 | 10UF STD 25V M |
| C624 | 0CE477DJ618 | 470UF STD 35V 20 |
| C625 | 0CQ1041N509 | 0.1U 100V K POLY TP |
| C626 | 0CE226DK618 | 22UF STD 50V M |
| C661 | 0CX4700K409 | 47P 50V J SL TA52 |
| C662 | 0CX4700K409 | 47P 50V J SL TA52 |
| C663 | 0CE227DD618 | 220UF STD 10V M FL TP5 |
| C664 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C665 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C666 | 0CE335DK618 | 3.3UF STD 50V 20% FL TP 5 |
| C667 | 0CN3320F569 | 3300P 16V K X TA52 |
| C668 | 0CN3320F569 | 3300P 16V K X TA52 |
| C669 | 0CE226DF618 | 22UF STD 16V M FL TP5 |
| C670 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C671 | 0CE107DD618 | 100UF STD 10V M FL TP5 |
| C672 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C673 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C674 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C675 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C678 | 0CF3341L438 | 0.33UF D 63V 5% TP 5 M/PE NI |
| C679 | 0CF3341L438 | 0.33UF D 63V 5% TP 5 M/PE NI |
| C680 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C681 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C682 | 181-007G | ECQ-V1H334JL3 |
| C683 | 0CQ6821N509 | 0.0068U 100V K |
| C684 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C685 | 0CE106DF618 | 10UF STD 16V M FL TP5 |
| C686 | 0CX5600K409 | 56P 50V J SL TA52 |
| C687 | 0CX5600K409 | 56P 50V J SL TA52 |
| C688 | 0CX5600K409 | 56P 50V J SL TA52 |
| C689 | 0CC0200K115 | 2P 50V D NP0 TS |
| C690 | 0CC0200K115 | 2P 50V D NP0 TS |
| C801 | 0CE107BJ618 | 100UF KME 35V M FL TP5 |
| C802 | 181-091U | R 220PF 2KV 10%,-10% R/TP TP7. |
| C803 | 0CK4710W515 | 470PF 500V K B TR |
| C804 | 0CQ1041N509 | 0.1U 100V K POLY TP |
| C806 | 181-001E | CE 400V 120UF M LUG (85) |
| C807 | 0CK10201515 | 1000P 1KV K B TS |
| C808 | 0CK10201515 | 1000P 1KV K B TS |
| ⚠ C809 | 0CQZVBK002C | A.C 275V 0.22UF K (S=22.5) |
| ⚠ C811 | 181-120K | 2200PF 4KV M E FMTW LEAD 4.5 |
| ⚠ C812 | 0CE108DH618 | 1000UF STD 25V M FL TP5 |
| " | 0CE477DJ618 | 470UF STD 35V 20 |
| C813 | 0CK4710W515 | 470PF 500V K B TR |
| C814 | 0CK1020W515 | 1000P 500V K B TS |

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| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| C815 | 0CK4710W515 | 470PF 500V K B TR |
| C816 | 0CN1030F679 | 10000P 16V M Y TA52 |
| C817 | 0CK4710W515 | 470PF 500V K B TR |
| C818 | 0CE107BH618 | 100UF KME 25V M FL TP5 |
| C819 | 181-091Y | R 680PF 2KV 10%,-10% R/TP TP7. |
| C820 | 0CE227DP650 | 220UF STD 160V M FM7.5 BULK |
| C821 | 181-120N | 1000PF 4KV M E FMTW LEAD4.5 |
| C823 | 0CK4710K515 | 470PF 50V K B TR |
| C824 | 0CK1020W515 | 1000P 500V K B TS |
| C825 | 181-091P | SL 270PF 1KV 10%,-10% R/TP TP5 |
| C825 | 181-091P | SL 270PF 1KV 10%,-10% R/TP TP5 |
| C826 | 0CE477DH618 | 470UF STD 25V M FL TP5 |
| C828 | 0CE107DF618 | 100UF STD 16V M FL TP5 |
| C829 | 0CF1021047A | 1000PF D 800V 5% TP 7.5 M/PP N |
| C830 | 0CE475DK618 | 4.7UF STD 50V 20% FL TP 5 |
| C831 | 0CE108BF618 | 1000UF KME 16V M FL TP5 |
| C832 | 181-091P | SL 270PF 1KV 10%,-10% R/TP TP5 |
| ⚠ C834 | 0CE476CP618 | 47UF SHL,SD 160V 20% FL TP 5 |
| C835 | 0CE107DF618 | 100UF STD 16V M FL TP5 |
| C841 | 0CE477DD618 | 470UF STD 10V M FL TP5 |
| C901 | 0CE475DR618 | 4.7UF STD 250V 20% FL TP 5 |
| C902 | 0CQ1044R539 | 0.1UF TE 250V K M/PE NI TP5 |
| C903 | 0CK12202510 | 1200P 2KV K B S |
| C904 | 0CE475DR618 | 4.7UF STD 250V 20% FL TP 5 |
| C905 | 0CN5610K519 | 560P 50V K B TA52 |
| C1203 | 0CN1020K519 | 1000P 50V K B TA52 |
| C1206 | 0CN1020K519 | 1000P 50V K B TA52 |
| C1207 | 0CN1020K519 | 1000P 50V K B TA52 |
| C1208 | 0CN1020K519 | 1000P 50V K B TA52 |
| C1209 | 0CE226DF618 | 22UF STD 16V M FL TP5 |
| R655 | 0CN1030F679 | 10000P 16V M Y TA52 |

## FUSE

| | | |
|---|---|---|
| ⚠ F801 | 0FS4001B53C | FUSE,TIME LAG 4000MA 250 V 5.2X20 |
| ⚠ F812 | 131-096N | FUSE,FAST BLOE 4000MA 125 V 2.5X7.6 |
| ⚠ FR803 | 131-096N | FUSE,FAST BLOE 4000MA 125 V 2.5X7.6 |

## COIL & TRANSFORMER

| | | |
|---|---|---|
| C1210 | 0LA0472K119 | INDUCTOR,47UH K |
| C1213 | 0LA0472K119 | INDUCTOR,47UH K |
| J57 | 0LA0102K119 | INDUCTOR,10UH K |
| J136 | 0LA0102K119 | INDUCTOR,10UH K |
| L04 | 0LA1000K119 | INDUCTOR,100UH K |
| L05 | 0LA0102K119 | INDUCTOR,10UH K |
| L202 | 0LA0102K119 | INDUCTOR,10UH K |
| L203 | 0LA0102K119 | INDUCTOR,10UH K |
| L204 | 0LA0102K119 | INDUCTOR,10UH K |
| L205 | 0LA0102K119 | INDUCTOR,10UH K |
| L251 | 0LA0102K119 | INDUCTOR,10UH K |
| L252 | 0LA0102K119 | INDUCTOR,10UH K |
| L402 | 150-L01Z | COIL,LINEARITY 97UH |
| " | 150-L02C | COIL,LINEARITY 170UH *LG CPT |

| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| L501 | 0LA0102K119 | INDUCTOR,10UH K |
| L502 | 0LA0102K119 | INDUCTOR,10UH K |
| L503 | 0LA0102K119 | INDUCTOR,10UH K |
| L506 | 0LA0102K119 | INDUCTOR,10UH K |
| L611 | 0LA0102K049 | INDUCTOR,10UH 10% TP |
| L661 | 0LA0102K119 | INDUCTOR,10UH K |
| L662 | 0LA0102K119 | INDUCTOR,10UH K |
| L663 | 0LA0102K119 | INDUCTOR,10UH K |
| L801 | 150-C02F | COIL,CHOKE 82UH R1217 |
| L901 | 150-C02A | COIL,CHOKE 10UH |
| L1202 | 0LA0102K119 | INDUCTOR,10UH K |
| L1203 | 0LA0102K119 | INDUCTOR,10UH K |
| R443 | 0LA0101K119 | INDUCTOR,1.0UH K |
| R545 | 0LA0681K119 | INDUCTOR,6.8UH K |
| R546 | 0LA0681K119 | INDUCTOR,6.8UH K |
| R547 | 0LA0681K119 | INDUCTOR,6.8UH K |
| ⚠ T401 | 6174V-6002T | FBT,FSV21C101 |
| ⚠ T402 | 6170VC0003C | TRANSFORMER,H-DRIVER DRUM 10*12 |
| ⚠ T802 | 6170VMCB01K | TRANSFORMER,SMPS EER4215 340UH |
| ⚠ T803 | 151-D02F | TRANSFORMER,STAND-BY EI-2519 0UH |

## CONNECTOR

| | | |
|---|---|---|
| P301 | 366-043K | CONNECTOR,PLUG(4P) |
| P802 | 366-043B | CONNECTOR ASSY,PLUG(2P) |
| P902 | 387-603E | CONNECTOR ASSY,9PIN (IL-J) |
| P903 | 366-009D | CONNECTOR,2.36PAI 1P |
| P1204 | 387-A10E | CONNECTOR ASSY,10P (L=300) |

## RESISTOR

| | | |
|---|---|---|
| C546 | 0RD1103F609 | 110K OHM 1/6 W 5.00% TA52 |
| D813 | 0RS0272H609 | 27 OHM 1/2 W 5.00% TA52 |
| ⚠ FR441 | 0RF0470J607 | 0.47 OHM 1 W 5.00% TA62 |
| ⚠ FR442 | 0RF0141K607 | 1.4 OHM 2 W 5.00% TA62 |
| ⚠ FR443 | 0RF0470J607 | 0.47 OHM 1 W 5.00% TA62 |
| ⚠ FR802 | 0RF0470H609 | 0.47 OHM 1/2 W 5.00% TA52 |
| ⚠ FR803 | 0RF0470K607 | 0.47 OHM 2 W 5.00% TA52 |
| J30 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| J33 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| J39 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| J69 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| J101 | 0RD2002F609 | 20K OHM 1/6 W 5.00% TA52 |
| J149 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| J154 | 0RD1101F609 | 1.1K OHM 1/6 W 5.00% TA52 |
| L01 | 0RD1500F609 | 150 OHM 1/6 W 5.00% TA52 |
| L10 | 0RD0102F609 | 10 OHM 1/6 W 5.00% TA52 |
| L210 | 0RD0101F609 | 1 OHM 1/6 W 5.00% TA52 |
| R01 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R03 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R04 | 0RD3301F609 | 3.3K OHM 1/6 W 5.00% TA52 |
| R05 | 0RD3301F609 | 3.3K OHM 1/6 W 5.00% TA52 |
| R06 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R07 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |

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| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| R09 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R10 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R12 | 0RD1001F609 | 1KOHM 1/6 W 5.00% TA52 |
| R13 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R14 | 0RD1603F609 | 160K OHM 1/6 W 5.00% TA52 |
| R15 | 0RD1001F609 | 1KOHM 1/6 W 5.00% TA52 |
| R16 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R18 | 0RD1203F609 | 120K OHM 1/6 W 5.00% TA52 |
| R21 | 0RD2201F609 | 2.2K OHM 1/6 W 5.00% TA52 |
| R22 | 0RD3902F609 | 39K OHM 1/6 W 5.00% TA52 |
| R23 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| R25 | 0RD1201F609 | 1.2K OHM 1/6 W 5.00% TA52 |
| R26 | 0RD1601F609 | 1.6K OHM 1/6 W 5.00% TA52 |
| R27 | 0RD3601F609 | 3.6K OHM 1/6 W 5.00% TA52 |
| R29 | 0RD1201F609 | 1.2K OHM 1/6 W 5.00% TA52 |
| R41 | 0RD6200F609 | 620OHM 1/6W 5 |
| R51 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R52 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R105 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R106 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R107 | 0RS0272J607 | 27 OHM 1 W 5.00% TA62 |
| R121 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R122 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R132 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R133 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R134 | 0RD0102F609 | 10 OHM 1/6 W 5.00% TA52 |
| R201 | 0RD0682F609 | 68 OHM 1/6 W 5.00% TA52 |
| R204 | 0RD0752F609 | 75 OHM 1/6 W 5.00% TA52 |
| R205 | 0RD0822F609 | 82 OHM 1/6 W 5.00% TA52 |
| R206 | 0RD0822F609 | 82 OHM 1/6 W 5.00% TA52 |
| R207 | 0RD0822F609 | 82 OHM 1/6 W 5.00% TA52 |
| R208 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R251 | 0RD0822F609 | 82 OHM 1/6 W 5.00% TA52 |
| " | 0RD0752F609 | 75OHM 1/6W 5 |
| R301 | 0RD0101F609 | 1 OHM 1/6 W 5.00% TA52 |
| R302 | 0RN1501F409 | 1.5K OHM 1/6 W 1.00% TA52 |
| R304 | 0RD0221A609 | 2.2 OHM 1/2 W(7.0) 5.00% TA52 |
| R305 | 0RD0221H609 | 2.2 OHM 1/2 W 5.00% TA52 |
| " | 0RD0271A609 | 2.7 OHM 1/2 W(7.0) 5.00% TA52 *LG CPT |
| R306 | 0RS2700K607 | 270 OHM 2 W 5.00% TA62 |
| R307 | 0RD1501F609 | 1.5K OHM 1/6 W 5.00% TA52 |
| R310 | 0RD1801F609 | 1.8K OHM 1/6 W 5.00% TA52 |
| R311 | 0RD4701A609 | 4.7K OHM 1/2 W(7.0) 5.00% TA52 |
| R312 | 0RD2201F609 | 2.2K OHM 1/6 W 5.00% TA52 |
| R313 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R401 | 0RD1501A609 | 1.5K OHM 1/2 W(7.0) 5.00% TA52 |
| R402 | 0RS2702K607 | 27K OHM 2 W 5.00% TA62 |
| R442 | 0RD5100A609 | 510 OHM 1/2 W(7.0) 5.00% TA52 |
| R444 | 0RD0392A609 | 39 OHM 1/2 W(7.0) 5.00% TA52 |
| R446 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R447 | 0RD3901F609 | 3.9K OHM 1/6 W 5.00% TA52 |
| " | 0RD3301F609 | 3.3K OHM 1/6 W 5.00% TA52 * LG CPT |

| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| R450 | 0RD4701A609 | 4.7K OHM 1/2 W(7.0) 5.00% TA52 |
| R451 | 0RD0822H609 | 82 OHM 1/2 W 5.00% TA52 |
| R453 | 0RS4702H609 | 47K OHM 1/2 W 5.00% TA52 |
| R455 | 0RS2702K607 | 27K OHM 2 W 5.00% TA62 |
| R456 | 0RS2702H609 | 27K OHM 1/2 W 5.00% TA52 |
| R501 | 0RD2202F609 | 22K OHM 1/6 W 5.00% TA52 |
| R502 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R504 | 0RN3902F409 | 39K OHM 1/6 W 1.00% TA52 |
| R506 | 0RD1001F409 | 1K OHM 1/6 W 5.00% TA52 |
| R518 | 0RD3302F609 | 33K OHM 1/6 W 5.00% TA52 |
| R521 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R522 | 0RD2702F609 | 27K OHM 1/6 W 5.00% TA52 |
| R523 | 0RD1003F609 | 100K OHM 1/6 W 5.00% TA52 |
| R524 | 0RD3001F609 | 3K OHM 1/6 W 5.00% TA52 |
| R537 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R538 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R539 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R540 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R542 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R544 | 0RD2701F609 | 2.7K OHM 1/6 W 5.00% TA52 |
| R551 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| R552 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| R558 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R559 | 0RD1800F609 | 180 OHM 1/6 W 5.00% TA52 |
| R572 | 0RD5600F609 | 560 OHM 1/6 W 5.00% TA52 |
| R573 | 0RD2403F609 | 240K OHM 1/6 W 5.00% TA52 |
| R601 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R602 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R604 | 0RD1201F609 | 1.2K OHM 1/6 W 5.00% TA52 |
| R606 | 0RD7501F609 | 7.5K OHM 1/6 W 5.00% TA52 |
| R608 | 0RD1201F609 | 1.2K OHM 1/6 W 5.00% TA52 |
| R609 | 0RD7501F609 | 7.5K OHM 1/6 W 5.00% TA52 |
| R610 | 0RD4702F609 | 47K OHM 1/6 W 5.00% TA52 |
| R611 | 0RD4702F609 | 47K OHM 1/6 W 5.00% TA52 |
| R621 | 0RD9102F609 | 91K OHM 1/6 W 5.00% TA52 |
| R622 | 0RD6801F609 | 6.8K OHM 1/6 W 5.00% TA52 |
| R623 | 0RD1003F609 | 100K OHM 1/6 W 5.00% TA52 |
| R624 | 0RD1003F609 | 100K OHM 1/6 W 5.00% TA52 |
| R625 | 0RD1003F609 | 100K OHM 1/6 W 5.00% TA52 |
| R626 | 0RD5601F609 | 5.6K OHM 1/6 W 5.00% TA52 |
| R627 | 0RD3601F609 | 3.6K OHM 1/6 W 5.00% TA52 |
| R628 | 0RD0331H609 | 3.3 OHM 1/2 W 5.00% TA52 |
| R651 | 0RD4700F609 | 470 OHM 1/6 W 5.00% TA52 |
| R652 | 0RD3300F609 | 330 OHM 1/6 W 5.00% TA52 |
| R662 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R663 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R664 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R665 | 0RD3901F609 | 3.9K OHM 1/6 W 5.00% TA52 |
| R666 | 0RD3901F609 | 3.9K OHM 1/6 W 5.00% TA52 |
| R667 | 0RD0102F609 | 10 OHM 1/6 W 5.00% TA52 |
| R670 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R671 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |

For Capacitor & Resistors, the charactors at 2nd and 3rd digit in the P/No. means as follows;

CC, CX, CK, CN : Ceramic
CQ : Polyestor
CE : Electrolytic

RD : Carbon Film
RS : Metal Oxide Film
RN : Metal Film
RF : Fusible

The components identified by mark ⚠ are critical for safety.
Replace only with part number specified.

| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| R672 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R801 | 0RD2701F609 | 2.7K OHM 1/6 W 5.00% TA52 |
| R802 | 0RD2201F609 | 2.2K OHM 1/6 W 5.00% TA52 |
| R803 | 0RD1001F609 | 1K OHM 1/6 W 5.00% TA52 |
| R804 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R805 | 180-A01P | 0.13 OHM 2 W 5% TA62 RWR |
| " | 180-A01M | 0.22 OHM 2 W 5% TA62 RWR |
| R806 | 0RD2401F609 | 2.4K OHM 1/6 W 5.00% TA52 |
| R807 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R808 | 0RD4701F609 | 4.7K OHM 1/6 W 5.00% TA52 |
| R809 | 0RS4702K607 | 47K OHM 2 W 5.00% TA62 |
| R810 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R811 | 0RS0152J607 | 15 OHM 1 W 5.00% TA62 |
| ⚠ R812 | 0RK8204H609 | 8.2M OHM 1/2 W 5.00% TA52 |
| R813 | 0RD1002F609 | 10K OHM 1/6 W 5.00% TA52 |
| R814 | 0RD0221H609 | 2.2 OHM 1/2 W 5.00% TA52 |
| R815 | 0RD0751A609 | 7.5 OHM 1/2 W(7.0) 5.00% TA52 |
| R816 | 0RD2001F609 | 2K OHM 1/6 W 5.00% TA52 |
| R903 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| R904 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| R905 | 0RD2200F609 | 220 OHM 1/6 W 5.00% TA52 |
| R906 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R907 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R908 | 0RD1000F609 | 100 OHM 1/6 W 5.00% TA52 |
| R909 | 0RS1501H609 | 1.5K OHM 1/2 W 5.00% TA52 |
| R910 | 0RS1501H609 | 1.5K OHM 1/2 W 5.00% TA52 |
| R911 | 0RS1501H609 | 1.5K OHM 1/2 W 5.00% TA52 |
| R912 | 0RD2204A609 | 2.2M OHM 1/2 W(7.0) 5.00% TA52 |
| R1202 | 0RD2200A609 | 220 OHM 1/2 W(7.0) 5.00% TA52 |
| R1203 | 0RD2200A609 | 220 OHM 1/2 W(7.0) 5.00% TA52 |
| RC801 | 180-822N | RWR 7W 1.0 OHM J PD |
| **SWITCH** | | |
| SW01 | 140-315A | SWITCH,TACT SKHV17910B LG C&D NON 12V |
| SW02 | 140-315A | SWITCH,TACT SKHV17910B LG C&D NON 12V |
| SW03 | 140-315A | SWITCH,TACT SKHV17910B LG C&D NON 12V |
| SW04 | 140-315A | SWITCH,TACT SKHV17910B LG C&D NON 12V |
| SW05 | 140-315A | SWITCH,TACT SKHV17910B LG C&D NON 12V |
| SW06 | 140-315A | SWITCH,TACT SKHV17910B LG C&D NON 12V |
| ⚠ SW801 | 6600VM2002A | SWITCH,SDKEA3 ALPS IEC 250V 8A HORIZO |
| **FILTER & CRYSTAL** | | |
| FB801 | 125-022R | FILTER(CIRC),EMC BI3857 FEELUX 5.7X3.6MM |
| FB802 | 125-022R | FILTER(CIRC),EMC BI3857 FEELUX 5.7X3.6MM |
| FB803 | 125-022R | FILTER(CIRC),EMC BI3857 FEELUX 5.7X3.6MM |
| FB1201 | 125-022R | FILTER(CIRC),EMC BI3857 FEELUX 5.7X3.6MM |
| L201 | 125-022R | FILTER(CIRC),EMC BI3857 FEELUX 5.7X3.6MM |
| L260 | 125-022R | FILTER(CIRC),EMC BI3857 FEELUX 5.7X3.6MM |
| T801 | 6200JB8008J | FILTER(CIRC),SQ2626 FEEL LUX |
| X01 | 156-A02B | RESONATOR,CRYSTAL HC49U RADIAL 12.000MHZ 30P |
| X661 | 156-A02M | RESONATOR,CRYSTAL HC49U RADIAL 18.432MHZ 30P |

| LOCA. NO | PART NO | DESCRIPTION |
|---|---|---|
| **ACCESSORIES** | | |
| A1 | 3828VA0271C | MANUAL,OWNERS NON LG GE/FR/IT |
| A2 | 6710V00090A | REMOTE CONTROLLER,W/ TXT.34KEY |
| **MISCELLANEOUS** | | |
| ⚠ P901 | 6620VBC003A | SOCKET,CPT PCS030A 8PIN 14/360 |
| PA01 | 6726VV0006H | REMOTE CONTROLLER RECEIVER 38KHZ |
| PJ201 | 381-091A | SOCKET,S-091A 21PIN H |
| JA1201 | 6613V00004F | JACK ASSY,PPJ107F |
| " | 6613V00004L | JACK ASSY,PPJ107L |
| JA1202 | 380-068B | JACK,PHONE 3.5 EARPHONE WITH SW S |
| RL801 | 6920VB1001E | RELAY,SDT-S-105LMR OEG 5V 0.05A 250V |
| ⚠ SK901 | 6620VBC003A | SOCKET,PCS030A 8P |
| ⚠ TH801 | 163-054F | THERMISTOR,J502P84D140M290Q |
| TU101 | 6700MF0001H | TUNER,TAFD-M232D LG MULTI FS 3SY |
| " | 6700SL0001A | TUNER,TAFL-S212D LG SECAM |
| " | 6700VPF009U | TUNER,TCPW3001PD16L SS SECAM-L |
| VD801 | 164-003G | VARISTOR,TVR621D14A 620V 10% U |

# Schematic Diagram of MC-019A

NOTICE

Since this is basic circuit diagram, the value of components and some partial connection are subject to be changed for improvement without notice.

The components marked ⚠ conform to VDE or IEC guide-lines and are essential for safe operation of the TV receiver. While those marked ⚠ are required for correct operation. Use specified parts only when replacing.

Value of resistor, capacitor and inductor

1. Resistances are shown in ohm. K=1-000. M=1-000-000.
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in uH and the values less than 1 in Henry(H).

Observation of voltages and waveforms

1. Voltages read with VTVM from point to chassis ground. line voltage is 230V/-20% volts. signal pattern is colour-bar.
2. The schematic shown is representative only.
3. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
4. Check FINE TUNING, AGC, CONTRAST, BRIGHTNESS and COLOUR controls for best picture. Make sure that COLOUR and BRIGHTNESS are in mid-point and CONTRAST is in 75%.
5. Waveforms are taken using a standard colour signal.

## <SYSTEM OPTION>

1 RF STEREO

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

2 AV STEREO

| COMPONENT | CL | CE | CT | CF | REMARKS |
|---|---|---|---|---|---|
| | | | | | |

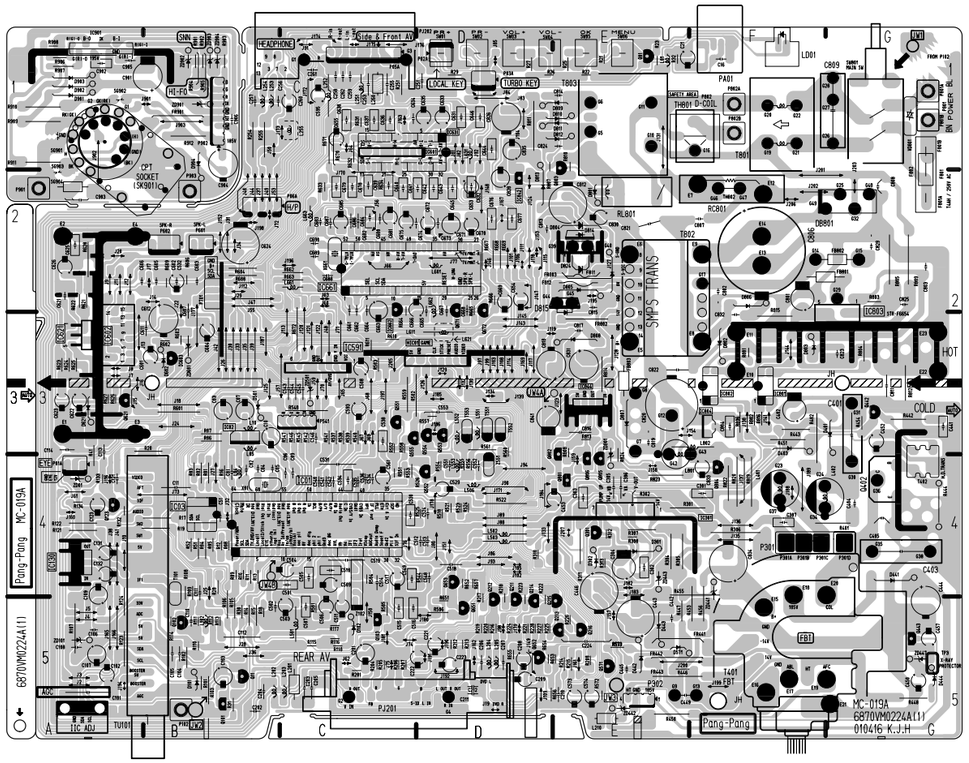
3 MONO

| COMPONENT | CL | CE | CT | CF | REMARKS |
|---|---|---|---|---|---|
| | | | | | |

P/NO:3854VA0083B-S
2001.04.20

## PRINTED CIRCUIT BOARD

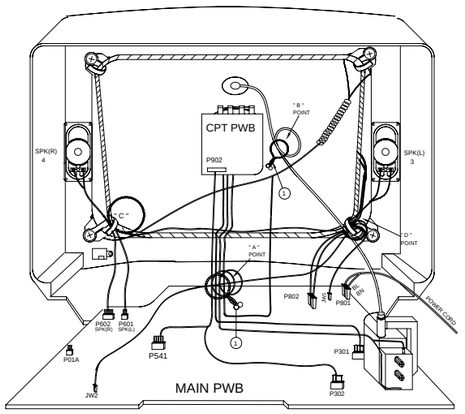
### MAIN & CPT




## COMPONENT LOCATION GUIDE

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C01.....B4 | C403.....G4 | C607.....B3 | C811.....G3 | F812.....E2 | L801.....E4 | R05.....B4 | R218.....D5 | R554.....D4 | R820.....F4 |
| C02.....B4 | C404.....G4 | C611.....B3 | C812.....E2 | F801A....G2 | L802.....E3 | R06.....B3 | R219.....D5 | R555.....D4 | R822.....F4 |
| C03.....B3 | C405.....G4 | C612.....B3 | C813.....D2 | F801B....G1 | LD01.....F1 | R07.....B3 | R220.....D5 | R556.....D4 | R823.....E4 |
| C04.....B4 | C441.....G3 | C621.....A2 | C814.....D1 | FB801.....F2 | P102.....B5 | R08.....B4 | R221.....D5 | R557.....D3 | R824.....E4 |
| C05.....B4 | C442.....E5 | C622.....A3 | C815.....E3 | FB802.....F2 | P302.....E5 | R09.....B4 | R222.....D5 | R558.....C4 | R901.....B1 |
| C06.....C4 | C443.....E5 | C623.....A3 | C816.....E3 | FB803.....E3 | P541.....C3 | R10.....B4 | R223.....D5 | R559.....C3 | R902.....B1 |
| C07.....B3 | C444.....G5 | C624.....B2 | C817.....E3 | FR441.....E5 | P601.....B2 | R11.....B4 | R224.....D5 | R560.....D4 | R903.....B1 |
| C09.....C4 | C445.....E5 | C625.....A2 | C818.....D3 | FR442.....E5 | P602.....B2 | R12.....B4 | R225.....D5 | R561.....D4 | R904.....B1 |
| C10.....B3 | C446.....E5 | C626.....A2 | C819.....E4 | FR443.....E5 | P701.....B2 | R13.....B4 | R226.....E5 | R572.....E5 | R905.....B1 |
| C11.....B4 | C449.....F5 | C631.....D1 | C820.....E3 | FR802.....E3 | P901.....A2 | R14.....B5 | R227.....D5 | R573.....E5 | R906.....A1 |
| C16.....F1 | C451.....G5 | C632.....D2 | C821.....E2 | FR803.....E2 | P902.....B1 | R15.....B5 | R228.....D5 | R601.....B3 | R907.....A1 |
| C21.....E1 | C452.....G3 | C633.....D1 | C822.....E3 | FR901.....B1 | P903.....B2 | R16.....B4 | R251.....C1 | R602.....B3 | R908.....A1 |
| C51.....B4 | C453.....E4 | C634.....C1 | C823.....G3 | HIC01.....D3 | P01A.....A4 | R17.....B4 | R254.....B2 | R603.....B3 | R909.....A1 |
| C101.....A5 | C457.....G5 | C635.....D1 | C824.....D1 | IC01.....B4 | P02A.....D1 | R18.....B5 | R255.....B2 | R604.....B2 | R910.....A1 |
| C102.....A5 | C501.....C4 | C636.....C1 | C825.....G3 | IC02.....B3 | P03A.....D1 | R19.....B4 | R301.....E4 | R606.....B2 | R911.....A2 |
| C103.....B5 | C502.....B5 | C637.....C1 | C826.....D1 | IC03.....B4 | P05A.....C1 | R20.....A4 | R302.....E4 | R608.....B2 | R912.....B1 |
| C104.....B5 | C503.....C5 | C638.....C1 | C828.....D2 | IC130.....A4 | P06A.....B2 | R21.....E1 | R304.....E4 | R609.....B2 | RC801....F2 |
| C105.....B5 | C504.....C4 | C639.....C2 | C829.....G2 | IC301.....E4 | P301A....F4 | R22.....E1 | R305.....E4 | R610.....C3 | RL801....E2 |
| C106.....A5 | C505.....C4 | C640.....C2 | C830.....E2 | IC591.....C3 | P301B....F4 | R23.....E1 | R306.....F4 | R611.....C3 | SG901....A1 |
| C107.....A5 | C506.....C5 | C641.....C2 | C831.....E3 | IC601.....D1 | P301C....F4 | R25.....E1 | R307.....E4 | R621.....A3 | SG902....A1 |
| C108.....A5 | C507.....C5 | C642.....D2 | C832.....F3 | IC602.....A3 | P301D....G4 | R26.....D1 | R308.....E4 | R622.....A3 | SG903....A2 |
| C109.....A4 | C508.....C3 | C643.....D2 | C833.....F4 | IC603.....B3 | P801A....G1 | R27.....D1 | R310.....D4 | R623.....A3 | SG904....A2 |
| C110.....B5 | C509.....C4 | C644.....D1 | C834.....F4 | IC621.....A3 | P801B....G1 | R28.....B5 | R311.....E4 | R624.....A3 | SW01.....D1 |
| C111.....B5 | C510.....C4 | C645.....D2 | C835.....D1 | IC631.....D1 | P802A....F1 | R29.....D1 | R312.....E4 | R625.....A3 | SW02.....D1 |
| C112.....B5 | C511.....C5 | C646.....D1 | C841.....D3 | IC661.....C2 | P802B....F1 | R30.....B5 | R313.....E4 | R626.....A3 | SW03.....D1 |
| C113.....A4 | C512.....D4 | C653.....D2 | C901.....B1 | IC662.....C2 | PA01.....F1 | R31.....B5 | R401.....F4 | R627.....A3 | SW04.....D1 |
| C114.....A4 | C513.....D4 | C654.....D3 | C902.....A1 | IC801.....F3 | PJ201.....C5 | R32.....E1 | R402.....F4 | R628.....A2 | SW05.....E1 |
| C121.....A4 | C514.....C4 | C655.....C1 | C903.....A2 | IC802.....F3 | PJ202.....C1 | R41.....A4 | R442.....G3 | R631.....C1 | SW06.....E1 |
| C123.....A4 | C515.....C5 | C661.....C3 | C904.....B2 | IC803.....G2 | Q01.....E1 | R51.....B4 | R443.....F3 | R632.....C2 | SW801....G1 |
| C131.....A4 | C516.....C5 | C662.....C3 | C905.....A1 | IC804.....F3 | Q11.....B5 | R52.....B4 | R444.....G4 | R633.....C2 | T101.....B5 |
| C132.....A4 | C517.....C4 | C663.....C3 | C906.....B1 | IC842.....D2 | Q101.....B5 | R101.....B5 | R446.....F5 | R634.....C2 | T401.....F5 |
| C201.....C5 | C518.....D4 | C664.....C3 | D101.....B5 | IC844.....E3 | Q102.....B5 | R102.....B5 | R447.....E5 | R651.....D5 | T402.....G4 |
| C202.....B5 | C519.....C4 | C665.....D3 | D102.....C5 | IC901.....A1 | Q103.....C5 | R103.....B5 | R448.....G5 | R652.....D4 | T551.....D3 |
| C203.....C5 | C524.....D4 | C666.....D2 | D301.....E4 | L01.....E1 | Q123.....A4 | R105.....B5 | R450.....E5 | R653.....E5 | T552.....D3 |
| C204.....B5 | C529.....D4 | C667.....D3 | D302.....E4 | L04.....B4 | Q211.....D4 | R106.....B5 | R451.....F3 | R654.....D5 | T553.....D3 |
| C205.....C5 | C530.....C4 | C668.....D3 | D401.....G4 | L05.....B3 | Q212.....D4 | R107.....A5 | R453.....F5 | R655.....D5 | TB01.....F1 |
| C206.....D5 | C531.....C4 | C669.....D3 | D403.....F4 | L10.....B3 | Q213.....E5 | R108.....B5 | R454.....G3 | R656.....D5 | TB02.....F3 |
| C207.....D5 | C532.....B2 | C670.....D2 | D441.....G4 | L102.....B5 | Q214.....D5 | R109.....B5 | R455.....E5 | R657.....D4 | TB03.....E1 |
| C208.....D5 | C534.....C4 | C671.....D2 | D442.....E5 | L201.....C5 | Q215.....E4 | R110.....B5 | R456.....F5 | R662.....B2 | TH801....E1 |
| C209.....D5 | C535.....C4 | C672.....D2 | D443.....E5 | L202.....B5 | Q216.....E5 | R111.....B5 | R501.....C5 | R663.....B2 | TH802....F2 |
| C210.....E5 | C536.....C4 | C673.....D2 | D444.....G5 | L203.....C5 | Q301.....E4 | R112.....B5 | R502.....D3 | R664.....C3 | TU101....B5 |
| C211.....D5 | C538.....C3 | C674.....D2 | D501.....B3 | L204.....D5 | Q402.....G4 | R113.....B5 | R503.....C3 | R665.....D3 | VD801....G1 |
| C212.....D5 | C540.....C4 | C675.....C2 | D571.....F5 | L205.....D5 | Q442.....G3 | R114.....B5 | R504.....C4 | R666.....D3 | X01.....B4 |
| C221.....D5 | C541.....C4 | C676.....D2 | D602.....B3 | L210.....E5 | Q443.....G5 | R115.....C5 | R505.....C5 | R667.....D2 | X661.....C2 |
| C222.....D5 | C542.....C4 | C677.....D2 | D621.....A3 | L251.....C1 | Q551.....C3 | R116.....C5 | R506.....D5 | R668.....D2 | Z102.....C5 |
| C223.....D5 | C543.....C3 | C678.....C2 | D801.....E2 | L252.....C1 | Q552.....D4 | R117.....C5 | R518.....D4 | R669.....D2 | Z551.....D4 |
| C224.....E5 | C544.....C3 | C679.....C2 | D802.....F3 | L253.....B1 | Q553.....D3 | R118.....C5 | R521.....D4 | R670.....C2 | ZD01.....A4 |
| C251.....D1 | C545.....C3 | C680.....C2 | D803.....F3 | L254.....B1 | Q554.....D3 | R121.....A4 | R522.....D4 | R671.....C2 | ZD101....A5 |
| C253.....C1 | C546.....C3 | C681.....C2 | D804.....E2 | L255.....C1 | Q555.....C3 | R122.....A4 | R523.....D4 | R672.....C3 | ZD441....F4 |
| C255.....C1 | C548.....D4 | C682.....C2 | D805.....E2 | L260.....C1 | Q571.....E5 | R123.....A5 | R524.....D4 | R801.....F3 | ZD442....E5 |
| C256.....B1 | C549.....C4 | C683.....C2 | D806.....F2 | L401.....F4 | Q621.....A3 | R124.....A5 | R525.....D4 | R802.....F3 | ZD443....E4 |
| C257.....B1 | C551.....D4 | C684.....C2 | D807.....E4 | L402.....F4 | Q651.....D5 | R132.....A4 | R526.....C4 | R803.....G2 | ZD447....G5 |
| C258.....C1 | C552.....D4 | C685.....C2 | D808.....E3 | L501.....C5 | Q652.....D5 | R133.....A4 | R537.....C3 | R804.....G3 | ZD501....C3 |
| C259.....C1 | C553.....D3 | C686.....C2 | D809.....D1 | L502.....D4 | Q653.....D4 | R134.....A4 | R538.....C3 | R805.....G2 | ZD601....B3 |
| C260.....C1 | C561.....C4 | C687.....C2 | D810.....E1 | L503.....D4 | Q671.....D3 | R201.....C5 | R539.....C3 | R806.....F3 | ZD801....E4 |
| C261.....C1 | C573.....E5 | C688.....C2 | D811.....D1 | L506.....D4 | Q672.....D3 | R204.....C5 | R540.....C3 | R807.....D2 | ZD901....B1 |
| C262.....C1 | C574.....E5 | C689.....C2 | D812.....E1 | L551.....D3 | Q801.....E4 | R205.....C5 | R541.....C3 | R808.....E4 | ZD902....B1 |
| C301.....F4 | C593.....C3 | C690.....C2 | D813.....D2 | L552.....D3 | Q802.....E4 | R206.....C5 | R542.....C3 | R809.....G2 | ZD903....B1 |
| C302.....E4 | C594.....C4 | C801.....F2 | D814.....E2 | L553.....D4 | Q803.....E2 | R207.....C5 | R543.....C3 | R810.....E2 | ZD904....B1 |
| C303.....E4 | C595.....C1 | C802.....F2 | D901.....A1 | L601.....D2 | Q804.....F4 | R208.....E5 | R545.....C3 | R811.....D1 | |
| C304.....E4 | C601.....B3 | C803.....G2 | D902.....A1 | L611.....D3 | Q805.....E4 | R212.....D5 | R546.....C3 | R812.....G3 | |
| C305.....E4 | C602.....B2 | C804.....F3 | D903.....A1 | L621.....D3 | Q806.....E4 | R213.....D5 | R547.....C3 | R813.....E3 | |
| C306.....E4 | C603.....B2 | C806.....F2 | D904.....B2 | L631.....D2 | R01.....B4 | R214.....E5 | R548.....C3 | R814.....E3 | |
| C307.....F4 | C604.....B3 | C807.....F2 | D8801....G2 | L661.....B2 | R02.....B4 | R215.....E5 | R551.....C4 | R815.....F3 | |
| C401.....G4 | C605.....B2 | C808.....G2 | F802.....G2 | L662.....D3 | R03.....B4 | R216.....D5 | R552.....C4 | R816.....F3 | |
| C402.....F3 | C606.....A2 | C809.....G1 | F811.....E2 | L663.....C2 | R04.....B4 | R217.....D5 | R553.....C4 | R819.....F4 | |

## WIRING DIAGRAM



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LG Electronics Inc.

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